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Making Regulation Robust in the Innovation Era

Cristie Ford

Innovation is a challenge to regulation, and it has ever been thus. As we grapple with the effects of a global pandemic, a climate crisis, and the profound and inevitable changes these will bring, we cannot lose sight of the ways in which private sector innovation will also weave its way through our responses, complicating and refracting the regulatory task and influencing both public priorities and outcomes.

Regulation – that undercelebrated and crucially important thing – operates at the front lines of policy, and reflects the normative priorities that we as societies hold dear. Many forces "regulate" in broad terms – the market regulates, the environment regulates (Lessig, 1998) – although for purposes of this handbook, we are talking about actual state regulation. Regulation here refers to sustained and intentional activity by the state in attempting, through direct or indirect methods, to control, order, or influence the behaviour of others in the service of public policy priorities. It almost inevitably is a multifactorial, complicated exercise within which important but not coterminous priorities – growth and equality, freedom and respect, safety and privacy – must be balanced. Because they are instruments of policy and reflections of social values, regulations must at some level be accountable, transparent, demonstrably legal, and perceived as legitimate. Process therefore matters a great deal when it comes to how regulation is promulgated, and how it is given effect. There is a certain amount of sober second thought, of recourse to principle and policy, of caution, and sometimes of recourse to centralized authority, that comes with this territory.

Private sector innovation, on the other hand, is not burdened with the same range of procedural or normative concerns. (The word "innovation" can mean different things. Regulators and states can be innovators too, and they are. For our purposes, however, the word "innovation" refers to private sector innovation.[1]) The Oxford English Dictionary defines it as "the alteration of what is established by the introduction of new elements or forms" (Oxford University Press, n.d.). As opposed to an invention, which is the first creation of an idea or good, innovation is the process of applying an idea in practice. Innovations can be technological, or they can be business- or process-related.

Private sector innovation is a complicated and dynamic phenomenon that presents continual challenges for regulation. An innovation and its effects only become more complicated, dynamic, and unpredictable as the innovation diffuses. Innovation evolves in reflexive, iterative relationship to the legal environment within which it operates. Not all its impacts are socially

[1] Note that state-driven elements of the economy, especially through the military and the space program in the United States, have catalyzed and funded many significant "private sector" innovations, both during the Welfare State years and into the present "knowledge economy" (Mowery, 2010; Mazzucato, 2011). However, the state has not driven the precise development or application of such technologies, nor has it benefited from them. For purposes of understanding how innovations affect other, non-research-oriented regulatory regimes, it still makes sense to call these private sector innovations and to focus on how innovation operates in the private context.

beneficial (though sometimes we speak as if they were), and its benefits are unevenly, and sometimes unpredictably, distributed.

The only constant is change

Over the last 100 years, the give-and-take between private sector innovation and regulation has been a leitmotiv in policy and public law. There is no real way to understand the relationship between private sector innovation and regulation today, without understanding the postwar Welfare State regulatory approach against which more contemporary regulatory technique has defined itself over the last several decades. In its waning days in the late 1970s, the Welfare State was widely perceived to have become cumbersome and unresponsive.[2] Modern regulatory theory developed in contradistinction to that discredited model. In the process, it evolved into a model that, perhaps only semi-intentionally, actively celebrated private sector innovation. In its way, then, what we have come to call the Regulatory State (1990s-2008) has also become its own distinct cautionary lesson about how public sector regulation should engage with private sector innovation. Today, we may wish once again to see a more forceful public actor in private spaces. To avoid the pitfalls of the past, however, any new post-pandemic regulatory model we develop will have to be capable of managing the constant, indeed accelerating, change that private sector innovation continues to force – without losing sight of its obligations and priorities in the process.

Innovation was not top of mind in postwar Europe and North America, when the Welfare State came to full flower (Esping-Andersen, 1996; Majone, 1997). Borne of hard experience with wars and economic depression, the Keynesian Welfare State's core concerns were to manage the social and natural risks – disaster, illness, economic uncertainty, poverty, old age – to which every human body was potentially vulnerable (Giddens, 1990). It did so through new social programs and direct state involvement in the economy. By the late 1970s, however, in many countries including the United States and the United Kingdom, the Welfare State's credibility was under siege. By this point, public actors were being criticized for having become inaccessible, over-proceduralized, and either (or *both*) non-transparent and unaccountable in their decision-making, and/or pathologically observant of rigid rules and procedures (McCraw, 1984). By 1980, more than 60 percent of Americans surveyed in a Gallup Poll felt that "quite a few of the people running government did not seem to know what they were doing" (Geer, 2004, p. 222). The Welfare State was also facing new headwinds as a result of increasing globalization, interconnection, novel technological and transportation developments – in other words, as a function of widespread and accelerating innovation. These phenomena forced Americans in particular to worry about their competitiveness. Forceful government

[2] Giandomenico Majone has influentially described a move from what he called the "Welfare State" – a top-down, control state that engaged directly in the economy as well as in social affairs – to a modern "Regulatory State" defined by its use of rules to intervene less directly in the economy and society. This shift is conceptually important, even if it is overdrawn. Views differ as to how cynical or, alternatively, how progressive a project it has been; about how much we can generalize across borders and subject matters; and about whether the "regulatory state" itself has gone through various stages of evolution and if so, what those stages are. Most would agree, however, that beginning around the early 1990s, in Europe and most Anglo-American jurisdictions, state action methods shifted from emphasizing direct state intervention in the economy to acting through regulation that applies to private actors in a way that is heavily enmeshed with capitalism (Levi-Faur, 2005).

inteventions into the economy (e.g., interest rate caps, the use of tax-and-spend power, state-owned utilities) came to look too expensive and burdensome to sustain.

Nevertheless, whether justified or not, by 1980 the concept of direct state involvement in the economy, the wisdom of creating state-owned enterprises to provide services that the private sector could provide, and the viability of a large public safety net had become highly unpopular. Politicians and others framed the tension as a binary contest between "public" (slow, obstructionist, out of touch) and "private" (agile, growth-oriented, full of promise), with problem-solving protagonists pitted against pencil-pushing obstructionists. The need to cut "red tape" suddenly seemed urgent. The word "bureaucracy" became an epithet. Even progressive, left-of-centre administrative law scholars found themselves advocating for the "reform" of regulation (Breyer, 1982). Enter the neoconservatives, Margaret Thatcher and Ronald Reagan chief among them.

The history of the Regulatory State, from the time that centre-left "Third Way" advocates like Tony Blair and Bill Clinton wrested back a degree of control in the 1990s, was about attempting to reflect and enact public-oriented, socially beneficial regulation to the (often limited) extent they believed to be possible, while still insulating themselves politically against charges that state actors were overly "bureaucratic," "command-and-control," "top-down", or even "sclerotic" (Short, 2012).

The Regulatory State from the early 1990s onward was not what the late-stage Welfare State was described to be. It was also not fundamentally deregulatory in the way that the 1980s reforms had been. Regulation, theory and practice, had transformed itself. Regulation and governance had been reinvented by "an increase in delegation, proliferation of new technologies of regulation, formalization of inter-institutional and intra-institutional relations, and the proliferation of mechanisms of self-regulation in the shadow of the state" (Levi-Faur, 2005, p. 13). It developed into a sophisticated, nuanced body of both practical experience and scholarship. "Flexibility" had become a watchword (Stewart, 1993; Sunstein, 1991). Adaptiveness, responsiveness, context-sensitivity, pragmatism, collaboration with private actors, and the ability to mete out proportionate, tit-for-tat responses became the *sine qua nons* of enlightened regulatory practice (Ayres et al., 1992; Lobel, 2004). Scholars of regulation began to imagine a deeper and more ideologically agnostic regulatory "toolbox" containing new techniques for channelling and harnessing private action (Coglianese et al., 2003; Gunningham et al., 1998). A good number of those tools were derived from economics, the belle of the late 20th century intellectual ball (see, e.g., Becker, 1983; Posner, 1973). But regulation and regulatory theory also drew on critical legal studies, civic republicanism, and legal theory, to chart a coherent intellectual and practical path forward in the straitened circumstances of the post-Welfare State era (Ford, 2017). While indisputably the Regulatory State had its shortcomings, it was also a significant imaginative and pragmatic achievement.

As the world become more complex, as regulatory subjects became more diverse, and as regulatory theory became more sophisticated, however, the Regulatory State project also began to bump up against some limits. At root, these limits were not so different from those the Welfare State encountered: they were about how regulation could be designed so as to safeguard public, norm- and law-driven priorities, even while achieving expected levels of

growth, national competitiveness, and innovation. The Regulatory State had perhaps just taken hold of the other end of the stick. By this point, regulatory practice and scholarship had acknowledged that private sector actors had more granular and timelier access to information than regulators did. This suggested that private actors seemed to be in a better position than regulators to make operational decisions. This regulatory difficulty was exacerbated by the fact that – in tension with the slower processes on which regulatory authority depends, which value certainty and justification and which aim to consider, to consult, and to deliberate – private sector innovation was continually changing the ground rules. Regulators seemed, then and now, to be struggling to keep up. In our highly innovative (and innovation-loving) age, then, the fundamental question looks more like this: how to collaborate with and perhaps even celebrate private sector innovation, without utterly ceding the field to private actors and losing sight of the public priorities that a regulator is charged with safeguarding?

In retrospect, the importance ascribed to economic efficiency – and its kindred spirits, enthusiasm for private sector growth, initiative, and innovation – may well have displaced too many other normative commitments and aspirations in the decades on either side of the millennium's turn. Writing from a vantage point early in the year 2021 – battered by a poorly managed global pandemic and the undeniable persistence of racism and discrimination; terrified about the consequences of climate change; having suffered through years of political tumult and populist anger following the financial crisis; and having recognized once again that there is more to a person's value than the quantum of their economic productivity – it seems clear that at the height of the Regulatory State, the pendulum swung too far away from the humane, collective, and dignity-affirming priorities that animated much of the Welfare State agenda.

And yet, the problems of change, unpredictability, and uncertainty that helped to undo the Welfare State persist. If anything, they have gotten more severe as the pace and scope of private sector innovation has increased. If we are to create a better state apparatus that attends to inequality, precarity, and human flourishing more comprehensively and explicitly than the Regulatory State did, we will have to confront these challenges.

Today, some of the greatest challenges that regulation faces stem from the speed, extent, and nature of human-driven change. In particular, private sector innovation has transformed the landscape in areas as varied as communications (social media), finance (derivatives, cryptocurrencies), retail (Amazon, e-commerce), manufacturing, health, and science (nanotechnologies, robotics, genetic engineering via CRISPR), transportation (ride-sharing, drones, global shipping and supply networks, autonomous vehicles), security (biomedical tracking, online surveillance), the platform economy (decentralized peer review, data as an asset), and more. While we are only beginning to understand the implications of these technologies, there is little sign that even a global pandemic will meaningfully limit the dynamism and complexity that private sector innovation continues to generate. On the contrary, innovation is flourishing.

So what have we learned over these past decades, about the relationship between innovation and regulation, which will be helpful as we confront these challenges? The next sections identify some of the main insights that Regulatory State and innovation scholarship developed

over the last three decades. In looking ahead to creating a new, post-Regulatory State approach that also avoids the pitfalls associated with the Welfare State, these lessons will be important.

Taking Stock: main concepts, significant theoretical & empirical achievements

One of the things that we have learned is that innovation and regulation are in a reflexive relationship with one another (Orts, 1994). Different innovative forms and trajectories, when combined with regulation, produce different effects. For example, sometimes, innovations are designed specifically in order to get around regulatory requirements (UK Financial Services Authority [FSA], 2009). In other contexts, private sector innovations can usefully be incorporated into public regulatory requirements, thereby improving them. The use of best practices, or best available technology standards in environmental regulation, is one such example (Flynn & Baylis, 1996). In still other situations, a particular private sector innovation proceeds on a parallel track alongside a regulatory regime, or outside familiar regulatory boundaries. Those innovations nevertheless influence and even undermine the adjacent regulated space. Consider the effect that ride-sharing apps have had on the regulated taxi industry (Pollman & Barry, 2017; Ranchordas, 2015), and now the permissionless blockchain-based ride-hailing apps, like Swarm City, that are poised to undermine those ride-sharing apps. How can a regulator even keep track, let alone make sense of the variable ways in which private sector innovation interacts with, undermines, improves, or otherwise influences regulation?

To begin with, regulation is not a monolithic thing. Regulation generally requires three main attributes: the capacity for standard-setting, the capacity for information-gathering or monitoring, and some capacity for behaviour modification (Hood et al., 2001). However, the tools one uses at each of these stages will have different effects. The form of regulation – ex ante compliance versus ex post enforcement, punitive versus permissive, principles-based versus rules-based, discretionary versus non-discretionary, all potentially operating at different stages or distinct scales – matters (Morgan & Yeung, 2007). For example, a more principles-based structure that allows highly expert frontline regulators to move quickly, with good access to information, can be a good choice in situations characterized by a high degree of uncertainty. Yet regulatory regimes that accept fast-moving innovation as inevitable, and try to adapt themselves by becoming more flexible or by delegating more responsibility to private sector regulated actors, may unwittingly generate even more, and faster, innovation as a result (Fullencamp & Rochon, 2014). A highly rule-driven regime will provide more certainty and predictability, which can be the most important consideration in certain situations. At the same time, when it comes to innovative activity, rigid rules can leave room for gamesmanship and loophole behaviour.

Innovation will affect regulation no matter how it is structured. In its design, regulation constitutes the spaces in which innovation happens (Polanyi, 1944). It creates loopholes,

opportunities, boundaries, and incentives. Different tradeoffs will make sense in different circumstances.[3]

Private sector innovation, also, is not a monolithic phenomenon. Innovation tends to be a social process, developed through bricolage and improvisation and influenced by the tools at hand and the immediate, often idiosyncratic, challenges to be addressed (Lévi-Strauss, 2010). Innovations commonly diffuse through networks and, whether or not they produce the best products or solutions, "nodes" within those networks can be especially successful at promoting uptake of their innovations. Moreover, networks are socially created and profoundly human, with all the attendant dynamics of power and human irrationality. Whether an innovation is influential may depend as much on an innovator's reputation, status, or network centrality as on the actual merits of the innovation (Lee, 2009). Some innovations can evolve very quickly, as was the case with deepwater oil drilling, while others can develop slowly and incrementally, like parts of the alternative energy sector.

Innovation is also environmentally and contextually contingent. Innovation looks different in different spaces, and it raises different concerns. Context matters. For example, the wholesale global financial products industry, which generated the synthetic financial innovations that underlay the financial crisis, is characterized by (a) stiff competition, plus (b) a strong first mover advantage, around (c) intangible financial products that can be engineered and re-engineered quickly and imaginatively, and (d) sold into a market that could not then usefully distinguish between a useful product and a lemon. In this environment, fast-moving innovation with questionable benefits and clear rent-seeking were the result. In other environments, different conditions will produce different effects.

It makes no sense for regulation to try to "foster innovation" in some blanket sense, without understanding the innovation in question, how it is diffusing, who benefits from its adoption, what unanticipated consequences may flow from it, and especially how it could undermine, circumvent, or otherwise neutralize existing regulatory processes and priorities.

Understanding the challenge that Innovation presents

An innovation (whether to business process, technology, or in finding novel uses for existing products) is concerning, for regulatory purposes, because of its ability to outstrip existing regulatory structures, such that they no longer fit or work properly (Smismans & Stokes, 2017). As a result, rules may stop operating as intended, perhaps because they are not broad enough to capture new behaviour or phenomena, or because activity has moved away from the formal object with which the regulation is concerned. This leaves regulators potentially focusing on the

[3] Political science and policy scholars within the interdisciplinary regulation and governance field have made recent empirical contributions to understanding how background regulatory structures also condition how a new innovation will be understood and responded to: see, e.g., special issue on "focusing on a moving target – the tentative governance of emerging science and technology", *Research Policy* volume 48 issue 5; *Regulation & Governance* special issue on "the governance of emerging disruptive technologies", available on earlyview at https://onlinelibrary.wiley.com/doi/toc/10.1111/(ISSN)1748-5991.governance-of-emerging-disruptive-technologies).

wrong things (Brummer, 2015). Responding to this and similar innovation-generated problems requires that the regulator be able to recognize that its effectiveness has been compromised, to understand the particulars of how it has been undermined, and to respond to it. This is not a straightforward or easy set of tasks. The nature of the challenge can be broken down into three different kinds of regulatory analytical problems.

First, particularly fast-moving innovations can generate *information and data problems* for regulators. These were present around deep water oil drilling in the Gulf of Mexico between 1995 and 2010, for example, or the explosive growth of the over-the-counter derivatives market for credit default swaps between 2004 and 2007 (Bank for International Settlements, 2018, Graph 4; National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, 2011). The massive, and massively accelerated, shift to online living, shopping, working, banking, and communicating during the pandemic is sure to raise a range of information (and other) problems for regulators with respect to taxes, privacy, urban planning, consumer protection, labour and employment, and accessibility of services. In cases like these where technological or business process changes, or social adoption levels, are moving exceptionally quickly, a fundamental problem that regulators are likely to encounter is simply that they do not have sufficient data to make sense of fast-moving changes in real time. They may lack the data either because the phenomenon is still too new to be producing adequate longitudinal data, and/or because only the innovators themselves have access to what data exist, and those innovators will not voluntarily share it. Consider, for example, the fact that in 2010, it was British Petroleum itself that had to devise never-before-tried responses – like the "junk shot" and the "top kill" – to the terrible and ultra-deep oil leak that followed the explosion of its Deepwater Horizon rig. The regulator was utterly unequipped to manage that disaster, for reasons that prominently included the lack of information they had on the risks that BP was running and the risks of ultra-deep oil drilling in general (National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, 2011). Complex systems, characterized by multiple interconnections, can also create unanticipated and outsized reactions, where system effects or multiple small errors' combined effects mutually reinforce each other (Perrow, 1984; Schwarcz, 2008). These are another form of information and data problem.

The second kind of problem that innovation generates for regulation is the *visibility problem*. One such example is the visibility problem that is created by incremental innovation; like the apocryphal frog in boiling water, one tends not to notice change until it has reached significant levels, and interests and practices have accreted around it. Consider the international shipping industry. The rise of the shipping container as the modular, multi-platform mechanism for moving goods around the world via boat, train, and truck was slow. At no point in the second half of the 20th century did it seem obvious to most observers that the container would transform the world economy, until one day it was clear that it already had (Levinson, 2006). Several regulators, ports, and unions did not appreciate the significance of the transformation before their existing regulatory, business, and bargaining models had become anachronistic.

Another kind of visibility problem arises at or near the boundaries or margins of a regulator's jurisdiction. These could be margins between particular administrative agencies, arranged "horizontally", or boundaries between states, nation states, regions, or global initiatives that

are arranged "vertically" (Boeger & Joseph, 2012; Langevoort, 2010). Regulatory and policy boundaries, obviously, do not always map neatly onto real world phenomena. Innovation exacerbates the problem, because enterprising innovators may be particularly attracted to the relatively low-visibility spaces far from any regulator's core concerns. These are areas that are not squarely within any particular regulator's expertise or jurisdiction, and where regulators' familiar analogies seem slightly off. Interest rate swaps operated for a long time in such a space, neither "fish" (securities) nor "fowl" (derivatives) (Funk & Hirschman, 2014). While the U.S. Securities and Exchange Commission and its Commodity Futures and Trading Commission argued over jurisdiction and characterization, the swaps markets expanded unhindered and unregulated. Innovative phenomena can also grow, unappreciated, outside a particular regulator's jurisdiction, only becoming visible once they have begun to have a significant impact or to wield significant power. The same seems to be true with respect to American cybersecurity policy (Lewallen, 2020). Or consider Amazon's growth: the company expanded without triggering conventional antitrust concerns, while building significant customer brand loyalty, to the point that it has been able to concentrate extraordinary market power and political influence (Khan, 2017; Culpepper & Thelen, 2019).

The third and most profound kind of problem that innovation presents for regulation is the *legibility problem*. Legibility is the ability to make sense of one's environment, to make reasonable sense-making assumptions, and to draw appropriate analogies between the familiar and the new. Innovation, by its nature, upends categories and undermines assumptions. Consider, for example, how special purpose entities in finance, which according to the traditional legal model of the firm seem to operate on corporate law principles, actually achieve their objectives through the separate legal mechanism of contract (Bratton et al., 2013). Equity derivatives manage to separate the vote attached to a corporate share from the economic interest underlying it, undermining not only corporate law assumptions but also priority under bankruptcy law, and more (Hu & Black, 2008). Familiar products that are characterized as "safe assets" for certain purposes may migrate into new spaces, where they substitute for other products and where they are not at all "safe" (Gelpern & Gerding, 2016).

Ultimately, these are epistemological problems. They are questions about what we know, what we do not know, and how we know what we think we know. Sometimes, with better data, regulators can identify and measure the risks associated with a novel product or process. Addressing the information or data problem brings a degree of clarity. At other times, the uncertainty runs deeper (Knight, 1921). The unknowns encompass not only questions about how external phenomena are developing, but also about how completely a regulator can rely on existing assumptions, analogies, or common wisdom about the world. These are the visibility and legibility problems. And of course, if just *seeing* developments and recognizing their significance in real time is hard, then anticipating problems is far harder.

Looking ahead: lessons for regulators

Learning from the experience of the Welfare State, we can recognize that detailed, top-down, one-size-fits-all regulatory mechanisms can impose significant costs, while not necessarily

achieving regulatory objectives (Bardach & Kagan, 1982). While we may in future want to see more of the kind of public intervention into private markets that characterized the postwar years, an unreconstructed, 1960s-style Welfare State apparatus would have no ability to manage the data and informational, visibility, and legibility problems that our fast-moving and highly innovative contemporary society produces.

More flexible Regulatory State mechanisms are better equipped to manage those kinds of problems, and its many and varied regulatory tools and strategies are a good foundation for the innovation-ready, post-pandemic, post-Regulatory State architecture that we are now going to have to construct. In order to make our new regulatory approach effective, robust, and credible, however, and to ensure that it is capable of interjecting a genuinely public-oriented and normatively engaged voice into the innovative context, it must have more capacity than some Regulatory State actors have had in the past. The paragraphs below elaborate on four crucial overarching lessons to be drawn from our recent experience: the regulator's conduct must be data-driven, the regulator must be adequately resourced, it must remain independent-minded, and ultimately, we cannot forget that there is no way to separate regulation and policy from politics.

First and above all, a nimble, data-driven regulatory approach is indispensable for dealing with the continual challenges that private sector innovation produce. The regulator must constantly be aware of the data and informational, visibility, and legibility problems that innovation creates. Because the environment will continue to change and one must be able to track that change, the regulator should be prepared to ask, continually, fundamental epistemological questions about what it knows, how it knows it, and what it does not know. This demands that regulators have access to high quality data, and that they be agile enough to respond to that data and to their own experiences of success and failure. Learning to see innovation in real time demands that regulators seek data and information, continually, to understand, for example, *who* is innovating and in response to what incentives? What kinds of innovations seem to be taking place? How are they diffusing? Where are the regulator's knowledge and data gaps, why do they exist, and what, if anything, can be done to fill them? (Ford 2017)

Second, and relatedly: effective regulation, regardless of its aims, requires that regulators be adequately resourced (Ford, 2010b). The prototypical Welfare State agency required a lot of "boots on the ground" to ensure compliance and impose sanctions for non-compliance. The more contemporary Regulatory State apparatus may superficially have appeared to be less resource-intensive, but regulators' ability to engage flexibly and credibly with regulated agencies actually required a great deal in the way of human resources and capacity. Meaningful enforcement is indispensable to maintaining credibility, including vis-à-vis more flexible alternatives, such as warning letters or threats (Cortez, 2014). Where things fell apart – as they did with oversight of global financial institutions in the run-up to the financial crisis, for example – under-resourcing and inattention were almost always the main part of the problem (Internal Audit Division, 2008; The Financial Crisis Inquiry Commission, 2011). Implementation is essential, and it is essential beyond the high-salience point when the acute crisis or the political moment has passed (Baumgartner & Jones, 2009).

There are no simple, all-purpose solutions for effective and legitimate regulation of innovation (Brownsword, 2008). All the same, there is learning to draw on. For example: more principles-based regulation, for all its challenges, makes sense under some conditions where innovation requires that a regulator be especially responsive and attuned to street-level developments (Black et al., 2007). Rules-based regulation makes sense where certainty is important or where, for all its limitations, some sort of bright-line boundary is a useful temporary placeholder, even recognizing that it will likely generate loophole behaviour and unintended side-effects (Ford, 2010a). Ex ante licensing regime makes sense in certain conditions, such as when the pace of innovation is making it difficult for a regulator to acquire enough data to understand the situation (Omarova, 2012; Posner & Weyl, 2015). Meta-regulation, or the "regulation of self-regulation," makes sense where innovators but not regulators have access to the necessary data, and where there is reason to believe that industry actors have some incentive to behave responsibly themselves (Rees, 1994; Parker, 2002). And virtually all contemporary regulation that tries to allocate resources effectively will involve a degree of risk assessment. Risk-based regulation can be quite effective, if adequately resourced, though again it will only be responsive to risks that it registers as significant (Black & Baldwin, 2012). Only an adequately-resourced regulator will have the ability to analyze the context effectively and to use this broad range of regulatory techniques appropriately.

Learning from the experience of the Regulatory State, we recognize now that flexibility is a regulatory tool, not a means unto itself. We have learned that as much as we might aspire to it, the "regulatory Utopia" – within which capable, responsible private actors voluntarily engage in ongoing dialogue with a flexible and outcome-oriented regulator, in the service of some hypothetical shared goal of optimized regulation – does not exist (Black, 2008). Private actors have their own interests. Public sector regulators are the ones charged with speaking on behalf of broader social commitments and normative priorities. As we begin to emerge from the economic, political, social and health-related crises of the past decade, a well-resourced and skilled regulator will be in the best position to recognize the appropriate tools for the context, and to implement responses that avoid the worst pitfalls of each.

In our contemporary environment, especially where fast-moving private sector innovation continues to transform the conditions under which we operate, adequate regulatory resourcing must include access to the best possible data, awareness of the limits of that data, and the capacity to work exceptionally well with it. The regulator should understand where its data are coming from, and should make efforts to continually improve the quality, quantity, reliability and granularity of that data. To the extent possible, tools should be put in place that allow the regulator to track change and innovation not only in real time, but also across time so as to recognize the transformations in markets, practices, and attitudes the innovation is producing. These data will form the foundation of decision-making vis-à-vis regulated actors, but also for learning about one's own regulatory technique, and for continually improving that technique based on that experience. These processes must be ongoing; there is no end point. Failure of renewal is a constant challenge.

Increased data and a more data-driven approach to regulation is already generating some concrete strategies, which one hopes will be implemented seriously and rigorously. The "regulatory sandbox" in the financial sector is one such example, which establishes incentives

for private actors to share their data with regulators. In exchange for access to a zone in which they can conduct live experiments in a controlled environment without fear of regulatory action, fintech players should be required in every case to provide supervising regulators with the kind of high-quality, granular, real-time data that regulators would not otherwise be able to access (Buckley et al., 2020). Better data and better analytic capacity have also given regulators themselves new and richer perspectives that can fully take into account, for example, how networks and interconnectedness operate in their sectors (Enriques et al., 2020).

Third, scepticism and independent mindedness are important characteristics in a regulator, as is a certain disinterest in whether or not one is popular. This is especially true around innovation, one of the main romantic objects of our times. Regulators should not forget that often, one of the central reasons that players are pursuing an innovation may be to circumvent regulatory rules, or to unlock the competitive advantage that flows from a particularly aggressive interpretation of those rules. Regulators that are overawed by the esoteric expertise that particular industry actors seem to have, as financial regulators arguably were in the run-up to the financial crisis, risk losing sight of the separate normative priorities they are charged with advancing (Desmond, 2013). Just as importantly, no matter how novel the innovation, "this time is [not actually] different" (Reinhart & Rogoff, 2009) in terms of fundamental regulatory concerns. Regulators are as vulnerable to being swayed by the zeitgeist as anyone else. It is therefore important that regulators recognize the constraints that their era's popular wisdom imposes on their thinking. This also requires the ability to track change across time.

In retrospect, it may seem obvious that the structure of the postwar Welfare State was poorly-suited to manage the effects of globalization in the 1970s, or that a "light touch" financial regulatory system in the 1990s, combined with competitive pressures in the industry, was likely to produce an irrational and ruinous race to the bottom. Identifying these issues in real-time, however, requires a significant streak of contrariness. It may be useful to establish a role of "institutional contrarian" within regulators, whose main purpose is to challenge assumptions and to push against consensus (McDonnell & Schwarcz, 2010).

In the run-up to the financial crisis, private financial industry actors deftly shaped the common wisdom around new financial products and their ability to "complete markets". Of course, this advanced their interests. Regulators, too, are in a position to behave with a certain degree of political acumen in the interest of advancing their mandate. They can and should be entitled think strategically about how to frame issues (Snismans & Stokes, 2017). For example, describing an innovation as a "radical" departure from past practice has the potential to activate political actors, in helpful or unhelpful ways. Labelling something as an unremarkable incremental evolution of existing practice downplays the significance of the potential impact, and suggests that past practice and familiar comparators continue to apply. The fact that these terms are subjective does not ultimately undermine their usefulness to regulators in framing a phenomenon in a particular way.

Regulating innovation as a deliberative, participatory project

The final lesson is perhaps the most important: it is that one cannot separate regulation from politics.

Political actors may be inclined to use regulatory examples to advance their own objectives. They may, for example, find it appealing to suggest that good regulatory technique, on its own, can create "simply better" outcomes along several conflicting metrics at once. In 2006, in describing the UK FSA's move to a more principles-based regulatory approach, which ultimately proved to be badly under-resourced and structurally flawed, FSA Chief Executive John Tiner argued that principles-based financial regulation produced simply "better" regulation, meaning *simultaneously* "(1) a stronger probability that statutory outcomes are secured; (2) lower cost; and (3) more stimulus to competition and innovation." (Tiner, 2006). Regulators should remain mindful of the ways in which, especially around innovation, others may be inclined to present "have your cake and eat it too" solutions that undermine effective regulation.

In other respects, as well, political considerations are inextricably embedded into the regulatory task itself. There are more and less effective or suitable regulatory strategies in different situations, of course, but at the end of the day it is not possible to "bracket" or elide fundamental distributional and normative choices (Cohen, 2010). Emerging technologies can intersect with and potentially challenge fundamental value concepts (Brownsword et al., 2017, pp. 15-20). Thus especially when it comes to regulating innovation, we must not let our romantic association with that term blind us to the fact that responding to private sector innovation forces us, actively or by omission, to make choices: between stability and growth; between environmental concerns and short-term capitalist goals; and between multiple, contested understandings of equity, justice, and the social good.

In the years since the financial crisis, the Regulatory State's centrist and collaborative regulatory mechanisms have attracted critique by the right, as always, but also by a resurgent left. In some contexts, unquestionably, regulators adopted public/private partnerships too uncritically, and progressive normative commitments fell by the wayside in the pursuit of compromise. In several cases the Regulatory State's moral compass, if one can speak of such a thing, did not tend so much toward equality or justice as toward efficiency. Those priorities are ripe for reconsideration. And, some parts of Regulatory State thinking remain as important as ever. Specifically, we should not lose sight of the crucial civic republican, justice-oriented, egalitarian instincts that characterized new governance strategies – the same imperatives that now drive initiatives as disparate as human-centred design, community-based financing and empowerment, and broadly inclusive deliberative democratic initiatives (Rahman, 2016; Ford, 2017). We also know more than we did a generation ago about the limits of state action, and about how norms develop.

Innovation is too fast-moving now, and conditions too complex and heterogeneous to imagine that a replica of the postwar Welfare State would function well. Workable regulatory models for managing innovation will have to contend with twenty-first century global phenomena. BigTech companies today have amassed astounding power, largely as a function of their incomparable access to data about people, and they may have spawned a new variant of capitalism in the process (Rahman & Thelen, 2019; Zuboff, 2019). Increasingly sophisticated computer tools, notably predictive algorithms, are generating novel challenges to regulation, the rule of law, and important social commitments including privacy and anti-discrimination efforts (Prince & Schwarcz, 2020; Wachter et al., 2018; Yeung, 2018). Established ways of operating have been upended by the pandemic and by the climate emergency. But given

adequate resources, independent-mindedness, a data-driven mindset, and an awareness of how politics can intersect with the regulatory task, post-Regulatory State regulators can have the capacity to reconceive legacy models in their fields and to adapt to the challenges that innovation poses today (Arner et al., 2017).

Regulation is at the leading edge of politics and policy in ways that we do not always fully grasp. Seemingly innocuous regulatory design choices have clear and profound practical ramifications for many of our most cherished social commitments. In this time of enormous flux, private sector innovation also continues to contribute to fundamentally reordering economies and politics in ways that must be reckoned with, if we value human dignity, equitable opportunity, democracy, and justice.

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